In Memoriam

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To Those Who Perished in the Disaster to the Titanic April 14th and 15th, 1912

AN ADDRESS TO THE CLUB OF PRINTING HOUSE CRAFTSMEN OF NEW YORK, DELIV ERED APRIL EIGHTEENTH, AT THE HOUR OF THE LANDING OF THE SURVIVORS

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In the revision certain changes were made to accord with the testimony taken by the committee appointed by the United States Senate to investigate the loss of the Titanic.

Progress, man's distinctive mark alone,
Not God's and not the beasts;
God is, they are;
Man partly is and wholly hopes to be.
BROWNING: *Death in the Desert.*

THOSE who knew and loved them mourn, but we who know only their deeds rejoice that the great heroic qualities of our race, of humanity still endure, that when opportunity comes, men and women nobly justify our faith and leave us the priceless heritage of their example. They have not died in vain. But also they are the soldiers who have died that we who are left in all the world may learn. "Almost all things are by the law purged with blood and without shedding of blood is no remission."

Material progress outstrips the moral laws on which it alone can securely build. So blind, so one-sided, is the human mind that it is only awakened by some great disaster, a disaster wholly due to its own sinful foolishness.

After the event it is easy to point out the incredibly many different mistakes that were made, as if any one of them were the cause of the disaster. It is as if the burglar who comes to grief should regret that the master of the house was awake, that a board creaked, that the door through which escape was to be made swung shut, that the revolver shot killed instead of wounding, that in the grapple

the policeman was the stronger. These incidents leading inevitably, sooner or later, to disaster were not causes. Disaster came because the man had deliberately disregarded the commandment, "Thou shall not steal." The parting of the ways occurred not when the burglar was caught, not at the first theft, but when his soul deliberately preferred dishonesty. Methods and devices, knowledge and skill have their place, but they alone prove broken reeds. Principles alone are eternal and it is because principles were not yet recognized, therefore ignored, that this great steamship foundered.

The Titans were more than human, beings with the intellect of men but without their moral natures. The Titanic was the greatest ship the world had created and her makers, her owners, her navigators, in spite of the loss of their Naronic, in spite of the recent sinking of their Republic, believing their creation unsinkable, set her above the morality of the past, not realizing that to navigate bigger ships requires a bigger expanding morality, not a lessened and shrinking morality, than of yore.

Superhuman disasters have been many.

In 1883, the eruption of Krakatoa killed 36,000 human beings, none of whom lived near the mountain; in 1896, a tidal wave on the coast of Japan destroyed 29,000 people; in 1900, 5000 lives were lost when a West

Indian hurricane submerged the city of Galveston; 77,293 died in the Messina earthquake; thousands formerly died at Panama, at Havana, of yellow fever, even as thousands are still dying yearly of hookworm, of the sleeping sickness, of tuberculosis.

When the air above us and the waters of the sea war against us, when the foundations of the earth give way, when the sun fails us and there is famine, when microscopic pestilence decimates the races we can only meet the immediate disaster with courage, yet hope and struggle to fathom the hidden causes.

Man is fighting a victorious battle even though the sun and the earth and the sea combine against him, even though the legions of the invisibly small attack him. In the San Francisco earthquake less than 500 persons perished; at Panama yellow fever no longer exists.

We must not acquiesce in the loss of the Titanic as an inevitable casualty; neither must we think that we have not yet learned how to prevent. Any modern undertaking, whether railroads, or coal mines, or great ships, or shops employing thousands of men and women can be managed without strikes, without interruption, without loss, if the old principles that underlie all efficiency are observed. It was inevitable that the rapid changes of the last fifty years should emphasize the need of

these principles; it was inevitable that they should be only tentatively applied and their value only partially recognized. Such a disaster as the loss of the Titanic makes imperative their universal recognition and application. One great railroad strike, one great coal strike, one great shipwreck ought to be enough. Such disasters cannot occur if the oldest wisdom is expanded to include a spiritual growth as great as the material growth.

"The wages of sin is death." This was said nearly 1900 years ago by St. Paul to the Romans, the most efficient nation of antiquity.

Even as we sit here, the survivors from the wreck of the Titanic are coming up the bay on the Carpathia. Sixteen hundred and thirty-five lives were suddenly snuffed out. Sin, not their sin, brought death.

What is sin? It has taken the human race millenniums slowly to find out what sin is. Sin is what ought not to be.

Over three thousand years ago Moses brought down from the mountain, engraved on stone, the Ten Commandments as a reliable, immediate, adequate and permanent record. These commandments covered certain acts that the civilization of that time had come to regard as sinful,—thou shalt not steal, thou shalt not kill, thou shalt not bear false witness.

The commandments still hold, we still need them, but other sins were not recognized in

the age of Moses. Vengeance was regarded as a virtue. "If any mischief follow, then thou shalt give life for life." Tyranny was not condemned; intolerance was not condemned; human slavery was not condemned; but as the ages rolled around these and other human failings came to be recognized as sins. The standards of morality are placed higher and as humanity advances it discerns new sins. To learn that religious intolerance is a sin cost millions of lives and millions of treasure; to learn that tyranny is a sin also cost millions of lives and millions of treasure; to learn that slavery is a sin cost millions of lives and millions of treasure. To learn that inefficiency is a sin has in this one disaster cost 1635 lives and $14,000,000 of value.

To say, therefore, that the wages of sin is death is no empty figure of speech!

The civilization of the world has greatly changed in the last fifty years, a greater and more sudden change than in the preceding fifty centuries. Up to fifty years ago nearly all the energy of the world, wherewith work was done, was supplied by the muscles of animals and of men, of animals, as in Europe and America, of men, as largely still to-day in India, in Japan and in China. But now we have substituted the uncarnate energy of coal, of oil, of gas, of distant water-falls for the incarnate energy of animals and men.

In the last century British criminals were sentenced to terms at hard labor. It was easy to define the time, three months, six months, but how could the hard labor be made specific? Sir William Cubitt invented the treadmill, on which the man was forced to climb 8640 feet for a day's work—hard, exhausting work. On a six-hour shift and for a man weighing 150 pounds this was one-ninth of a horse-power. The power was used for pumping or for grinding corn. Here was a human being whose brain might perhaps have been capable of such work as Edison's, or Westinghouse's or Marconi's, or Faraday's, or Lord Kelvin's, using his muscles through the long hours to do feebly as much work as a single pound of coal could perform, a pound of coal worth the fifth of a cent; and while the man was developing this fifth of a cent's worth of energy, it was costing 25 cents a day to support him! The man was no doubt a criminal, he had perhaps stolen a chicken, he deserved punishment for undermining the foundations of society, but what about the criminal inefficiency of the prison administration? The whole of a strong man's time and 25 cents in money to do the work that the burning of a single pound of coal could have done better!

Treadmills are no longer operated in British prisons but they still are used in China, where men on treadmills make power to propel

stern-wheel river boats. These coolies are paid 10 cents an hour and wear themselves out in four years, but a horse-power of this kind costs $2000 a year.

The difference between power at $20 a year and wages at 30 cents an hour, as at Niagara, and power at $2000 a year and wages at 10 cents an hour is directly due to the substitution of uncarnate for incarnate energy. As compared to existing conditions in China, we have $1920 gain on every horse-power used and this gain constitutes our material civilization. This tremendous change has gradually brought about the recognition as the peculiar sin of this age, the long-neglected iniquity, inefficiency.

In the Old Testament there is very little recognition of efficiency, although there is constant recognition of strenuousness. "Whatsoever thy hand findeth to do, do it with all thy might." Also in antiquity minute ceremonial systems were established, but efficiency was overlooked. Strenuousness means to achieve a slightly better result by a greatly increased expenditure of energy. The prophets were strenuous. The Pharisees were systematizers; they rigidly followed precedents. Christ was the first great teacher of efficiency, the first who taught that less effort could be made to produce bigger results. Even in his time, and later too, the wholly natural consequences of

efficient knowledge and action were considered miraculous.

Christ, too, generalized from a specific disaster. "Those eighteen upon whom the tower of Siloam fell and slew them, think ye they were sinners above all who dwelt in Jerusalem? Nay, except ye repent ye shall all likewise perish."

It is only since we began to measure the efficiency of treadmills, of water-wheels, of steam engines, of oil engines, of refrigerating machines, of chemical reaction, of combustion, that we have begun also to state the performance of machines, of materials, of money, of methods and of man in terms of efficiency.

We have suddenly and almost universally recognized the virtue of efficiency, the wickedness of inefficiency and that

The wages of sin is death.

The old Greeks gave the name of sirens to deceitful and destructive creatures who assumed the form of beautiful women only to lure those who were on the sea to horrible deaths.

In the days of Solomon the difference between wantonness and virtue, between depraved and virtuous women was clearly recognized and plainly characterized.

"For the lips of a strange woman drop as

an honeycomb and her mouth is smoother than oil."

"Her feet go down to death, her steps take hold on hell."

"Remove thy way far from her and come not nigh the door of her house, lest thou mourn at the last when thy flesh and thy body are consumed."

"For she has cast down many wounded, many strong men have been slain by her.

"Her house is the way to hell, going down to the chambers of death."

Again we read that a virtuous woman is above rubies. The heart of her husband doth safely trust in her, so that he shall have no need to spoil. She will do him good, not evil, all the days of her life. She is like the merchant's ships. Let her own works prove her in the gates.

The principles of righteousness, of common sense, do not change. Principles have always existed even if humanity was not wise enough to apply them.

What real difference is there except in magnitude between the siren of the street dragging down to their deaths those who are deceived by her, and the siren of the ocean highway, bedizened and tricked out in marvelous finery, dragging to their deaths those who trusted her? What real difference is there between the virtuous woman who does

good, not evil, and those ships of the sea of the Cunard Line which in seventy-one years, from the first voyage of its 1154-ton Britannia, have not killed a passenger? The Cunard fleet has always borne the highest character for the build, manning, and management of the ships, and the reward of the scrupulous care exercised has been a rare immunity from what are called casualties.

What real difference is there between the corrupt mayor of a city who misuses his great office and power that sirens of the city may flourish, and the worse than corrupt Government of the United States which gave sins of omission the stamp of its highest official approval—the Government which compels sick American children to wait for hours on a dirty, seatless dock while is assesses a few dollars of duty against repaired American-made clothing of American material, this so ultra-pharisaical Government of which we had a right to expect protecting regulation, but which has betrayed us by opening the pathway of the seas to sirens of the oceans, not requiring of them safety appliances that even sailboats used to have.

The Titanic carried more boats than she was required to carry by British or American law, a lifeboat capacity for 972 people and a human cargo capacity of over 3,000 souls! What can we think of the makers of such laws?

Three governments, the British Government, through inadequate regulations and laxer inspection and tests; the United States Government and the French Government, through negligent acceptance of foreign regulations and tests, have permanently earned scorn and contempt by their culpable incompetence.

But governmental inefficiency does not excuse the managers of the line. The wages of their inefficiency was death.

The lesson of efficiency, the lesson that disaster and death follow the violation of the principles of efficiency inevitably and on a gigantic scale, is the one lesson we should learn. The owners and managers of this great steamer are men whom we have envied for their power and success. With their opportunity, we would have been as reckless and culpable as they are proved to be. Their sin is our sin, it is the sin of the age, the sin against efficiency. It was, perhaps, always so, for the prophet said: "Full well ye reject the commandment of God, that ye may keep your own tradition."

Individuals, corporations and nations have indeed been consumed by three iniquities—money lust, luxury lust and rebellion against restraint, but the more reason for tempering greed, luxury and arrogance with efficiency.

What then is the remedy?

Is it that the very Senate which made these inefficient laws should constitute its members into a court of enquiry? No!

Is it that all ocean steamers should be equipped with sufficient lifeboats? No! It is safer to be carried by a Cunard without a lifeboat, than to take passage on some other boats with a deck cargo of lifeboats, especially if there are not enough sailors and they are not adequately drilled to launch the few boats carried.

Is the remedy to pass laws that passenger steamers shall be smaller in size and cross the ocean in pairs? No!

It is that the inefficient governments shall assume control of wireless operation? No!

All these remedies are merely devices, which, like the carrying of a book, cannot convert the fool into a wise man. Devices may be as dangerous as a gun in the hands of a fool.

The remedy is to recognize and follow principles, principles that must guide all human activities unless we are to reap the disaster and the death which are the modern wages of modern sin.

This is a positive age. We are no longer content with negative virtues. The command is not, "Thou shalt not waste." It is, "Thou shalt be efficient." Therefore there are positive principles underlying efficiency, positive and specific preventives of inefficiency. These

principles, more or less recognized from the beginning of the world, have for convenience been grouped under several heads.

1.—Ideals.
2.—Common-sense.
3.—Competent Counsel.
4.—Discipline.
5.—The Fair Deal.
6.—Efficiency Reward.
7.—Records, Reliable, Immediate and Adequate.
8.—Planning and Despatching.
9.—Standards and Schedules.
10.—Standardized Conditions.
11.—Standardized Operations.
12.—Written Standard-Practice Instructions.

1. Ideals.—Ideals involve clear and high thinking. What is clearly and plainly the object in view in any business or undertaking? Whether the object be peaceful or warlike, what is the highest way of attaining it?

2. Common-sense.—There are those who would condense all the twelve principles into this single word.

3. Competent Counsel.—No man can rely on himself. The fields of knowledge, experience, and activity are too vast. There must be means of tapping all the available information possessed by associates or even by the conduct of materials, tools, and other accessories. In

submarines pet mice are used to give warning of accumulation of dangerous gases, competent and important counselors, and the swing of the stars is used to give us correct time, so that we can begin our daily work at the hour appointed.

4. Discipline.—The religious communities have existed and prospered from hoar antiquity. There are associations of individuals who have voluntarily submitted to an iron discipline for the common good. The man at the top is even more obligated by the discipline of his order than the novice coming in on trial. Discipline means the subordination of the individual to the more important common good.

5. The Fair Deal.—This follows on discipline and is interwoven with it. Even in war, when some specially hazardous task is to be undertaken, discipline is not called into play, but the Fair Deal, and each is given the coveted chance to volunteer. In case of a shipwreck each, however weak, receives a portion of the scant food. If the Fair Deal to all is as yet only a hope for humanity, it is not impossible in the shop.

6. Efficiency Reward.—Life has apparently progressed from the primal ooze and slime through the principle of deficiency punishment and efficiency reward. Take away all hope of reward, and Nirvana alone remains—eternal peace, stagnation, quietude. When this

great principle of reward is directly woven into an efficiency struggle, it pushes irresistibly upwards. The form it takes is not essential; but if it is disregarded, even the best weary of well-doing.

These six are the altruistic principles. The other six are practical.

7. Records, Reliable, Immediate, Adequate.—Progress from inefficiency to efficiency can be measured only by comparative records. Lapses from efficiency, spurts towards efficiency, must be immediately, reliably, and adequately recorded. Records that do not serve this purpose may have value as tombstones or as monuments commemorating triumphs, but very indirectly do they further efficiency.

8. Planning and Despatching.—Planning and despatching make the difference between a newspaper and the babble of the crowd, between the harnessed power of Niagara and the untamed rapids of the St. Lawrence, between the regulated channel of one river and the shallowing, eroding, inundating flood of another river. In both cases there is a stream flowing from source to finish, but how different in efficiency!

9. Standards and Schedules.—The difference between music and noise, between an army and a mob, between a wagon-train and a stampeding herd of cattle, between righteous-

ness and wickedness, is that standards and schedules have been evolved for music, for an army, for a wagon-train, for righteousness; none, for noise, for a mob, for a stampede, for wickedness.

10. Standardized Conditions.—Standardized conditions are subjective and objective. Both the individual and the environment must continually improve, not together but alternately. The fireman regulating with one finger the flow of oil into a mammoth Mallet locomotive accomplishes far more, with less effort, works less time and receives more pay, than his prototype, the galley slave or the palanquin bearer.

11. Standardized Operations.—The man who, blindfolded, plays twelve games of chess and wins them all, who plays, without notes, in perfect sequence, time and expression a symphony of a hundred-thousand notes, who walks the chasm of Niagara on a tight-rope; the man who made modern Italy, modern Germany, modern Japan; the camera that finds and shows the approaching comet, the spectroscope that reads the motion and materials of the distant stars—these show the possibilities and reach of standardized operations.

12. Written Standard-Practice Instructions.—The Ten Commandments were graven on stone. The books that the Sibyl gave to Tarquin were written instructions. Magna

Charta, the Declaration of Independence, the Constitution, codes of laws, are written; and they constitute standard-practice instructions. Efficiency is both attained and maintained by the help of written instructions, thus saving from oblivion much that is of value, thus detecting and eliminating much that is arbitrary and contradictory.

Had those in charge of the Titanic, governments, owners, officers been guided by these principles of efficiency instead of relying on the impulses of the moment, the Titanic would still be afloat.

Let these twelve principles test the acts* which culminated in the loss of 1635 lives.

What is the chief ideal of travel on the sea? What was the ideal of the first boat (Noah's Ark) of which there is any mention in the Bible? To transport safely, to save life, not to destroy! Many have thought to show their wit by making fun of the Ark. It had no speed but it was safe. It had no tennis courts or swimming-tanks, but it was safe. It was built for safety and it stood the test.

Safety, not speed,—safety, not luxury,—safety, not economy,—*safety* is the supreme ideal! On the Titanic this high ideal was subordinated to speed, to vain luxury, even as

*See Appendix for certain facts regarding the disaster.

sirens and their purveyors always subordinate ideals to speed and luxury.

Even as the principle of ideals had been forgotten, so also were the next two efficiency principles, those of competent counsel and common-sense, disregarded!

The sinking of the Republic and of the Dakota were taken to heart by Captain Roden* but competent counsel (the second principle) was neither sought nor heeded by the owners and managers of the Titanic.

As in the days of Solomon fundamental truths apply. "His own iniquities shall take the wicked and he shall be holden with the cords of his sin. In the greatness of his folly he shall go astray. The wise in heart will receive commandments but a prating fool shall fall."

To save a comparatively few miles in distance was it common-sense to go so far north and deliberately to take the risk of colliding with a repeatedly reported ice field? Was it common-sense to go to sea with 2340 souls on board and lifeboats only sufficient for 972? Was it common-sense to be plunging ahead at a speed of over 21 knots when within a few miles' run of the located bergs? The principle of common-sense was not observed in the operation of the Titanic!

The fourth principle is the Fair Deal. This

*See extract from Captain Roden's article in Appendix.

principle was flagrantly violated. Passengers who paid high prices to travel on the newest, largest, most luxuriously equipped steamship in the world,* had a right to assume that the governments, the inspection service, the corporation, and the officers to whom they so trustingly committed themselves would follow a safe course, would provide enough boats, would heed warnings, would have a double lookout when in the immediate vicinity of danger!

The fifth principle is that of Discipline. There was indeed discipline, but not competent, planned, scheduled and despatched,—discipline, not of standardized conditions, of standardized operations and of specific instructions, but nevertheless heroic discipline. Women and children were sent ahead, men stood back that those weaker might go, the wireless operators stayed with their instruments until the last, the captain went down with his ship. In this supreme hour of the death penalty for the sins, not their own, of

*Extract from a White Star folder advertising the Titanic.—"Sports decks and spacious promenades; commodious staterooms and apartments en suite; cabins de luxe with bath; squash racket courts; Turkish and electric bath establishments; salt water swimming pools; glass enclosed sun parlors; veranda and palm courts; Louis XVI. restaurants; grand dining saloons; electric elevators."

inefficiency it was not the individual who proved a weakling. The heroism of the age of the gods still animated the brave men and women in that last hour when the superficial and shallow barriers of caste, of education, of wealth were torn away.

Sooner or later we all must die. Better a little sooner the death of heroes than a little longer to drag out the life of the craven.

The sixth principle is that of Efficiency Reward. Were any rewards offered for efficiency? Lives of men, women and children were lost but not honor, not faith. Even the one most at fault died as a man should die.

None of the ethical, moral principles of efficiency, of which there are six, were observed.

The practical principles of efficiency are also six. These practical principles are those applied by modern Scientific Management. They are methods by which results are accomplished, but the wages of inefficiency are not the less death if the moral principles are violated and only the scientific principles observed. A man may be a thief, a murderer, yet use science; he may use all ingenuity to sin or he may use wisely all the practical principles, yet dismally fail if the love of righteousness is not in his heart.

The practical principles were applied in the operation of the Titanic.

There were records, the latitude and longitude were known, the number of knots and speed were known. The time of the crash is accurately known as well as the hour of sinking. Even the exact distance to the bottom of the ocean is known. The number of passengers and crew and their names are known. On shipboard, more than anywhere else, are the records reliable, immediate and adequate.

The principle of planning and despatching had been fully observed. No more stupendous naval structure had ever been put together. It was the last word of the naval architect's art. The hull and engines had been built for each other. Although a maiden trip, the combination was working so beautifully, so fully up to greatest expectations, that there came the temptation to make a record even on the maiden voyage! Even where the results were inefficient, as in the number of lifeboats, there was no failure in plans. All the planned boats were there.

The great steamship had also been scientifically despatched. She had left on time and was expected to arrive on time. The course was laid out in advance. She was despatched along the scheduled run at scheduled speed in spite of ice.

Schedules were also provided. The pressure in the boilers, the numbers of revolutions of the propeller, therefore the speed, were all

scheduled in advance. There was nothing the matter with the schedules.

The planning, the schedules, the despatching were so perfect that they seemed to make unnecessary the observance of the moral principles.

Standardized conditions are part of man's gain over earlier ages. One of the chief attainments in railroading is that the condition of road and track are standardized. Therefore, almost irrespective of weather, trains make their time. Nowhere has man succeeded in triumphing over conditions more than on the sea. Before the days of steam one traveler was 18 days in getting from Holland to England in a sailing vessel. "Wind and weather permitting" is a saying of the sea, but the great ocean liners are able to run on schedule almost without reference to wind and weather. Nevertheless no ship has yet been built that can stand a collision at full speed, and, although no ship had ever been built better able to defy conditions, the Titanic crumpled up like an eggshell when it struck the berg. Had it struck head on instead of a raking blow it might have floated as was at first reported. Priceless lives might have been saved, but without a dock on the American side of the Atlantic long enough, with few harbors deep enough for a water-logged wreck of this size, the material loss would

have been large. All conditions were not standardized.

To use Standardized Operations is another principle. Some of the operations on the Titanic were standardized, others not. The handling of the lifeboats had not been standardized. Two of them could not be manned nor launched. Some of them steered away only partly filled. The sea was calm and the sky clear and there were two hours and forty minutes between blow and founder. The stewards and sailors had been insufficiently drilled to provision and launch the lifeboats skilfully.

Written Standard-Practice Instructions is the final practical principle. As in all scientifically managed companies there were written standard-practice instructions for the Titanic. Definite sea lanes were designated many years ago by agreement of all the important steamship lines, and all captains of the White Star Line are required to navigate their vessels as closely as possible along these lanes subject to standing instructions.*

The practical principles, essential though they are for perfect operation, are valueless unless reared on the underlying ethical or moral principles. Scientific Management is in the highest and best sense not scientific man-

*See extract from instructions in Appendix.

agement if it fails to realize ideals, common-sense, the fair deal.

Are we on account of disaster going to falter? Shall we hesitate to build large and fast, beautiful and comfortable steamships? To falter is not the remedy. Larger and faster, more beautiful and more luxurious ships will succeed the Titanic, but men must learn to feel, think and act righteously and efficiently as well as scientifically and skilfully.

There must be no divorce between advanced practical methods and the welfare of mankind. It is the welfare of the woman, the child and the man that must first be considered. The heroic law of the sea must still prevail. The universal human grief over the disaster to the Titanic should be for not only the lost passengers and lost ship's men, not only for the treasure lost, but also for the mistakes, the sins of those who put their trust in man's creation, not in God's laws.

"For heathen heart that puts her trust
In reeking tube and iron shard—
All valiant dust that builds on dust,
And guarding calls not Thee to guard,
For frantic boast and foolish word,
Thy mercy on Thy people, Lord!"

APPENDIX

CERTAIN DETAILS AS TO THE DISASTER.

Part of the testimony of the third officer, Lightoller, before the committee of the United States Senate, in New York, is:

"A warning was received on noon Sunday from the steamship Amerika of ice ahead, latitude 41.27 N, longitude 50.8 W. The speed of the Titanic, between 22.5 and 23 knots (26 to 27 miles an hour), was not reduced nor had the lookout been doubled." (Others testified that the speed was 21 knots, about 24 miles.)

"At nine o'clock Sunday night the Captain said ice ought to be close about 11 o'clock and added, 'It is very clear. If it gets hazy, we will have to slow down.'"

The Titanic at 11.40, running at full speed and less than eight miles away from the reported position of floating ice, struck the berg.

On the steamship were 2,340 persons.

There were in all 20 lifeboats of which 16 were regular wooden boats, two collapsible part canvas boats, and two smaller boats. The two collapsible boats could not be launched before the ship went down because the sailors were both insufficient in number and wanting in skill. The capacity of all the lifeboats was about 972 persons. Several of the boats were only partially filled so that only 705 were saved, including those picked up alive from the water. The saved were: Officers, 4; crew, 206; third class, 178; second class, 115; first class, 202; total saved, 705; total lost, 1635.

EXTRACT FROM ARTICLE BY CAPTAIN E. K. RODEN, IN "THE NAVY," NOVEMBER, 1912.

"The new steamers, named, respectively, Olympic and Titanic, will be the finest vessels afloat. In their equipment and interior arrangement, no expense will be spared to attain every conceivable comfort that a man or woman of means can possibly ask for. These new liners will have staterooms with private shower baths; a swimming pool large enough to permit of diving; a

ballroom comprising an entire upper deck, which will serve also as a skating rink; a gymnasium abundantly equipped with modern paraphernalia; a café so arranged on one of the upper decks as to render the illusion of a café at a seaside resort as realistic as possible. Other novelties of these modern floating palaces will be a sundeck representing a flower garden protected by a glass roof and bedecked with a large variety of tropical plants and foliage. The carrying capacity of the vessels will exceed, by at least one-third, that of any vessel afloat to-day, and each steamer will be able to carry, under normal conditions, 2,500 passengers and have a crew of nearly 900 men.

"The reading of these reports is fascinating to the average man, who takes it for granted that side by side with the luxurious comforts are combined the elements that make up the factor of safety that a well-equipped passenger ship should possess. The traveling public assumes that the steamship company has done everything to insure the safety of passengers in case of shipwreck, and that all regulations stipulated by law to safeguard life have been complied with. It assumes that all appliances for the preservation of life in case of danger, such as necessary boats, rafts, life-belts, and all other provisions for safety, are in keeping with the fittings of luxury and comfort —the best that money, experience, and inventive genius can supply. This being the case, the great question arises as to whether or not the steamship company deserves the confidence and trust thus reposed in it by the public. We believe this question of sufficient importance to warrant the placing of it in the limelight of fair, considerate investigation.

"In all undertakings, whether great or small, certain well-recognized principles must be applied. One of these is that provision be made to insure against possible loss or failure in the practical operation of the undertaking.

"When we consider the remarkable progress and advance made in naval architecture and shipbuilding during the last quarter century, when we read of the wonderful achievements of wireless telegraphy and of the no less admirable system

of submarine signalling, one would naturally conclude that safety of life at sea was assured and that the factor of safety had reached its highest attainable value: in other words, that the principle previously referred to had been fully complied with. We fear, however, that in many respects much remains to be done by the ship-owner before this millennium in sea travel is attained.

"In order to insure the safety of passengers and crew in case of a ship actually on the point of sinking, common-sense will tell us that there should be on hand boats and rafts of sufficient number and capacity to accommodate every person on board. The ship should be rendered absolutely independent of assistance from without, because conditions might be such as to place the ship in a position where she must rely on her own resources. Though equipped with wireless apparatus, it is evident that when help is most needed something might prevent the operator from sending out his 'I need assistance' message; or the wireless may be in perfect working order, but the help called for too far away to reach the scene of accident in time to be availed of. In either case, or in any similar case, it is evident that the boats, to meet the emergency adequately, should be there.

"But, how, in these days of watertight compartments, can a ship of modern construction sink? Such a calamity would seem improbable, but it is far from being so. Notwithstanding the many watertight compartments, experience teaches us that up to date no one can guarantee to build an unsinkable ship.

"Unsinkable ships, like fireproof buildings, are dreams we hope some time to realize. That splendid transpacific liner Dakota was equipped with no less than twelve bulkheads; yet she went down off the coast of Japan and proved a total loss. The steamer Columbia, which, after a collision with the steam schooner San Pedro, off Shelter Cove on the Mendocino coast, on July 21, 1907, sank within eleven minutes after being struck, was equipped with four watertight bulkheads, or one more bulkhead than the law required in a ship of the Columbia's size.

"The White Star liner Republic was a ship of modern construction, and her bulkheads and devices for closing the watertight doors were of the standard types and in perfect working order; yet, very soon after the collision, with the Floride off Nantucket Shoals on Jan. 23, 1909, a supposedly intact bulkhead, separating the after engine-room from the stern portion of the ship, gave way, causing the ship to settle gradually by the stern until she finally went down. By a combination of favorable circumstances—comparatively smooth water and the timely arrival of succoring ships—no lives were lost. But under adverse conditions, such as a rough sea that would have hastened the breakdown of bulkheads, the story of the foundering of the Republic might have been very different indeed.

"After careful consideration, the writer feels safe in saying that out of the great number of passengers carried by ships every year, not over two-thirds could be accommodated in the lifeboats and rafts. That such is the case was amply demonstrated at the time of the collision between the Republic and the Floride. A letter written by a passenger on the Baltic, the rescuring steamer, and published in the *New York Herald*, Jan. 26, 1909, stated, among other things, that the Baltic's inspection certificate authorized her to carry 2041 passengers, in addition to her crew of 370, or a total of 2411 persons, but that her boat capacity was sufficient for only 1372 persons, so that 1039 persons would have had to be left to their fate.

"On being interviewed about the statement made in that letter, the general manager of the operating service of the line owning the Baltic replied as follows, in the Jan. 27 issue of the *Herald*.

" 'It is a well-known fact that it is impossible for a steamship in passenger service to carry enough lifeboats to accommodate all hands at once. If this were done, so much space would be utilized for lifeboats that there would be no room on deck for the passengers. The necessary number of lifeboats would be carried at the cost of many of the present comforts of our patrons.'

"This reply represents in general the conditions on all passenger-carrying steamships to-day.

"Not only is boat-capacity, as a rule, inadequate, but in many cases circumstances are such that the full complement of boats carried cannot be launched.

"Comments, by investigating boards, on the lack of proper davits and the insufficiency of men to launch boats properly at a critical moment, when minutes and seconds count, have frequently been made in official communications.

"When building a new ship the extra cost for the best safety appliances is only a very small fraction of the total cost of the ship, and a trifle compared with the cost of the luxurious appointments of the interior."

The editor of *The Navy*, commenting upon Captain Roden's article, said:

"We are pleased to think that the great ships of to-day are practically proof against the elements, and doubtless they are. *However, they are far from being beyond the risk of misadventure,* due to the errors or carelessness of the navigator; and at any time a wreck, resulting from a grounding or from a collision at sea, may put in peril the thousands of lives carried on the largest of these vessels. Moreover, we have not yet reached that perfection in engineering which shall render these constructions safe from the risk of some accident.

"Captain Roden speaks with authority. He has made a careful study of the features that he sets forth, and his own experience as a mariner and student of marine affairs qualifies him to judge temperately of the matters he discusses.

"Captain Roden's personal history is interesting, stated merely as a catalogue of his varied experiences. He entered the Swedish Government Naval School at the age of fourteen, graduated after four years' service, including sea service, and serving for three years as an ensign, resigning his commission to go into the marine service, where he served successfully for three years in the British Merchant Service, a year and a half in the Swedish Merchant Service, three years and a half in the Argentine Coast Survey and Passen-

ger Service, and a year in the Russian Torpedo Transport Service, followed by some two years in the British Merchant Service, and a year on one of the West Indian merchant lines. He has been head of the Nautical Branch of the International Correspondence Schools of Scranton for some years, during which time he has written text-books on ocean, coastwise, and lake navigation, nautical astronomy, and descriptive meteorology. His 'Mariner's Pocketbook' is a handbook that is a model of condensed and complete information on the subjects of which it treats, and is of interest to the amateur with nautical tastes, as well as of great value to professional students. Captain Roden has published, in collaboration with Professor Doolittle, of the University of Pennsylvania, a number of works on descriptive and practical astronomy."

EXTRACTS FROM INSTRUCTIONS TO COMMANDERS OF THE WHITE STAR LINE.

"Commanders must distinctly understand that the issue of these regulations does not in any way relieve them from responsibility for the safe and efficient navigation of their respective vessels and they are also enjoined to remember that they must run no risk which might by any possibility result in accident to their ships. It is to be hoped that they will ever bear in mind that the safety of the lives and property entrusted to their care is the ruling principle that should govern them in the navigation of their vessels and that no supposed gain in expedition or saving of time on the voyage is to be purchased at the risk of accident. The company desires to maintain for its vessels a reputation for safety and only looks for such speed on the various voyages as is consistent with safe and prudent navigation.

"Commanders are reminded that the steamers are to a great extent uninsured and that their own livelihood as well as the company's success depends upon immunity from accident; no precaution which insures safe navigation is to be considered excessive."